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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,265	12/16/2004	David Keith Roberts	NL 020545	3538

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EXAMINER	
ALLISON, ANDRAE S	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,265	ROBERTS, DAVID KEITH	
	Examiner	Art Unit	
	ANDRAE S. ALLISON	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendement filed April 2, 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-3, 5 -14 and 16-24* is/are rejected.

7)☐ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

1. The Office Action has been made issued in response to amendment filed April 2, 2008. Claims 1-3 and 5-24 are pending. Applicant's arguments have been carefully and respectfully considered in light of the instant amendment, and are not persuasive. Accordingly, this action has been made FINAL.

2. Claim Rejections – 35 USC section § 102 & 103

In response to Applicant argument on pages 6-7, that Celik fail to disclose the method further characterised in that said number of signature bits increases with the complexity of said audio-visual signal, the Examiner agree since Celik was not relied upon for the rejection of the limitation "the method further characterised in that said number of signature bits increases with the complexity of said audio-visual signal". Applicant also argued on pages 7-8 that Krishnamachari does not teach the method further characterised in that said number of signature bits increases with the complexity of said audio-visual signal, however the Examiner disagrees because Krishnamachari clearly shows in figure 2 that the number of signature bits increases with the complexity of said audio-visual signal, thus creating authentication signatures for digital image which is difficult to duplicate if the image is altered.

Claim 15 still remains objected to as containing allowable subject matter.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 5-7, 12-14 and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Celik et al (NPL document titled " Hierarchical Watermarking for Secure Image Authentication with Localization") in view of Krishnamachari et al (US Patent No.: 6,804,356).

As to independent claim 1, Celik teaches a method of authenticating an audio-visual signal (hierarchical watermarking for secure image authentication, see title) comprising formation of a progressive signature (see page 589, section B, [p][003], where the better signature is formed at each level) by generating a variable number of signature bits (note that signatures are computed for each block, see page 589, section B, [p][001-003]). However, Celik does not teach the method further characterised in that said number of signature bits increases with the complexity of said audio-visual signal. Krishnamachari teaches a hierarchical image authentication method, (see column 1, lines 5-8) further characterised in that said number of signature bits increases with the complexity of said audio-visual signal (see Fig 2B). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have combined the teaching of Celik and Krishnamachari for creating authentication signatures for digital image which is difficult to duplicate if the image is altered (column 2, lines 1-5 and lines 19-21).

As to claim 2, Celik teaches the method comprising the steps of splitting said audio-visual signal into blocks and progressively decreasing the size of said blocks (see Fig 2, where the image is divided into blocks of decreasing size).

As to claim 3, Celik teaches the method further comprising the steps of generating said signature from the contents of said blocks (see page 589, section B, [p][002], where the signatures are computed from each block), whereby said number of signature bits progressively increases with decreasing block size (since signatures are computed for each block and the block size are decreasing, the number of signature would increase, see page 593, section C, [p][003]).

As to claim 12, Celik teaches the method further comprising the steps of implanting said signature in said audio-visual signal and/or storing or transmitting said audio-visual signal (see page 589, section B).

As to claim 13, Celik teaches the method whereby the signature is implanted in the audio-visual signal as a watermark (see page 589, section B).

As to claim 14, Celik teaches the method further comprising the step of verifying the authenticity of said audio-visual signal by verifying said signature (see page 90, section C).

As to claim 18, neither Celik or Krishnamachari teach the method whereby said step of generating signature bits based on said DC-differences is characterised by thresholding said DC-differences. Inoue discloses a method for embedding and extracting digital information that includes the step of generating signature bits based on said DC-differences is characterised by thresholding said DC-differences (see column 38, lines 45-50).

As to claim 19, Celik teaches the method, wherein said audio-visual signal is a digital image (see abstract).

Claim 20 differ from claim 1 only in that claim 1 is a method claim whereas, claim 20 is a system claim. Thus, claim 20 is analyzed as previously discussed with respect to claim 1 above.

Claim 21 differ from claim 5 only in that claim 5 is a method claim whereas, claim 21 is a system claim. Thus, claim 21 is analyzed as previously discussed with respect to claim 5 above.

As to claim 22, Celik teaches the computer readable medium (memory, page 593, section D, line 3) having a plurality of computer-executable instructions (software, page 591, section A, [p][002], line 12) for performing the method according to claim 1 comprising a program module (see Fig 8) for formation of a progressive signature giving

instructions to a computer for generating a variable number of signature bits.

Claim 23 differ from claim 5 only in that claim 5 is a method claim whereas, claim 23 is a computer readable medium claim. Thus, claim 23 is analyzed as previously discussed with respect to claim 5 above.

As to claim 5, note the discussion above, Krishnamachari teaches the method further characterised by the steps of splitting said audio-visual signal into blocks (step 501, see Fig 5), merging similar blocks into regions (step 590, see Fig 5), and generating said signature based on said regions (note that additional signature are generated, see column 2, lines 8-12).

As to claim 6, note the discussion above, Krishnamachari teaches the method, the steps of merging similar blocks into regions and generating said signature based on said regions comprising the steps of calculating an image characteristics value for each of said blocks, assigning blocks with similar image characteristics values to regions, calculating differences between image characteristics values of said regions, and generating said number of signature bits based on said differences between said image characteristics values of said regions (see column 4, lines 6-42).

As to claim 7, note the discussion above, Krishnamachari teaches the method,

said image characteristics values being DC-values (see column 3, lines 30-31).

5. Claims 8-9 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Celik et al (NPL document titled " Hierarchial Watermarking for Secure Image Authentication with Localization") in view of Krishnamachari et al (US Patent No.: 6,804,356) further in view of Inoue et al (Patent No.: 6,477,276).

As to claim 8, neither Celik or Krishnamachari teach the method further characterised in that said steps for the formation of said progressive signature are at least once looped. Inoue discloses a method for embedding and extracting digital information that includes the step of the formation of said progressive signature are at least once looped (see Fig 9). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have combined the teaching of Celik as modified by Krishnamachari and Inoue for embedding and extracting digital information in transform coefficients of a digital image without losing information from an attack by an authorized user (column 4, lines 19-45).

As to claim 9, note the discussion above, Inoue teach the method further characterised in that the size of said blocks is decreased in each loop (see Fig 9).

As to claim 16, note the dicussion above, Krishnamachari teaches the method whereby the step of calculating DC-differences between said regions comprises the steps of arranging the DC-values of said regions in the order in which the regions are

formed and calculating said DC-differences between consecutive regions for all regions (step 570, see Fig 5).

As to claim 17, note the discussion above, Krishnamachari teaches whereby the step of splitting said audio-visual signal into blocks is characterised by said blocks being formed in a previously formed region (550, see Fig 5).

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Celik et al (NPL document titled" Hierarchical Watermarking for Secure Image Authentication with Localization") in view of Lee et al (Pub No.: US 2003/0172275). As to claim 10-11, Celik does not teach the method further characterised in that the length of said signature with a variable number of signature bits is limited to a maximum signature length and wherein said maximum signature length being defined as the maximum payload of the watermark. Lee discloses a real-time watermarking ([p][002], lines 1-4) characterised in that the length of said signature with a variable number of signature bits is limited to a maximum signature length and wherein said maximum signature length being defined as the maximum payload of the watermark(see [p][0016]). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have combined the teaching of Celik and Lee for real time watermarking embedding and extracting of a robust watermark that can survive attacks such as editing ([p][0023]).

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Celik et al (NPL document titled" Hierarchical Watermarking for Secure Image Authentication with Localization").

As to claim 24, Celik fail to mention the use of the method according to claim 1 in a surveillance camera or security camera or digital image camera or digital video camera or a medical imaging system. However, it would have obvious to used the method in a surveillance camera or security camera or digital image camera or digital video camera or a medical imaging system so that a digital signature in the form of a watermark can be inserted in an image created from any of the mentioned device so that the image can be later authentication if required (OFFICICAL NOTICE).

Allowable Subject Matter

8. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrae S. Allison whose telephone number is (571)

270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Meta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrae Allison

July 7, 2008

/Andrew W. Johns/
Primary Examiner, Art Unit 2624